

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of priority to Provisional Application Serial No.

60/118,217, filed February 1, 1999, and U.S. Provisional Application Serial No. 60/125,462,

a continuation of

5 filed March 22, 1999 and ~~U.S. Utility~~ Application Serial No. 09/495,821, filed February 1,

2000, all of which are incorporated herein in their entirety by reference.

BACKGROUND OF THE INVENTION

10 Field of the Invention

This invention relates to the field of optical metrology in general, and to in-line thin-film reflectometry and profilometry for semiconductor wafers in particular.

Description of Related Art

15 A trend towards smaller critical dimension sizes in integrated circuits (IC) drives advances in technology for semiconductor capital equipment. Both technical factors, such as the ratio of the critical dimension size to the wavelengths of light used by fabrication device components, and well known economic factors, such as wafer throughput, Cost-Of-Ownership (COO) and Overall Equipment Effectiveness (OEE) are critical.

20 In IC fabrication, hundreds of process steps are necessary. During some of these steps, successive layers of materials are deposited on a substrate. Subsequently, Chemical Mechanical Polishing (CMP) is often used to make a film layer planar to high degree of